REMARKS

Claims 1-16 are pending in the present application. The Examiner has rejected claims 1-16. Applicants believe this Response traverses the rejection of claims 1-16 and respectfully request examination and reconsideration of these claims.

I.   Specification Amendments

Paragraph 16 has been amended to correct apparent typographical errors. Specifically, the words "On" and "know" have been corrected to be "One" and "known," respectively. No new matter has been added by these amendments.

II.   Claim Amendments

Several claims have been amended to correct apparent grammatical and typographical errors. Specifically, in claims 1 and 2 the word "advance" has been changed to "advanced". In claim 8, the words "on" and "switches" have been changed to "one" and "switch," respectively. In claim 14, line 2, the word "said" has been deleted after "to", and the word "an" has been inserted in its place. In claim 15, the word "an" has been changed to "a". These claim amendments add no new matter and do not narrow the scope of the claims in any way.

In order to correct an additional apparent typographical error, claim 16 has been amended to depend from claim 12 instead of claim 11. This claim amendment adds no new matter.

Several claims have been amended to more clearly state the claimed subject matter. Specifically, the words "one or more" have been inserted at various locations in each of claims 7, 11, 12, 13, and 16. In the last line of claim 2, "signals" has been changed to "signal". In claims 1, 2, 11, and 12, "valid control" has been changed to "valid communication". These claim amendments add no new matter and do not narrow the scope of the claims in any way.

III. Anticipation Rejection

Claims 1, 7-8, 11, 13, 15, and 16 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,594,645 issued to Nishimura *et al.* Applicants respectfully traverse the rejection of these claims.

Nishimura discloses a cruise control apparatus for a vehicle ("the controlled vehicle") including a distance-based (D-type) control and a speed-based (S-type) control. (Nishimura, Column 2, lines 7-20; Column 5, lines 33-42.) The apparatus of Nishimura includes a control unit (**20**) "for executing the control of" the system and a distance sensor (**10**) for detecting the distance (*i.e.*, a "vehicle-interval distance") between the controlled vehicle and a vehicle positioned ahead of the controlled vehicle. (Nishimura, Column 5, lines 33-48.) The distance sensor of Nishimura determines the vehicle-interval distance by emitting a light or sonic wave signal toward the vehicle ahead and receiving the corresponding return wave signal that is reflected by the vehicle ahead. (Nishimura, Column 18, lines 27-37.) During certain conditions (*e.g.*, with rain or excessive pitch motion of the controlled vehicle), the distance sensor's emitted wave signal may not reach the vehicle ahead and will, therefore, not be reflected back to the distance sensor. (Nishimura, Column 18, lines 27-37.) As a result, the return wave signal is "missed" by the distance sensor, and a "signal missing" state is determined. (Nishimura, Column 18, lines 17-55; Column 19, lines 22-25.) In consideration of this predictable circumstance, the apparatus of Nishimura provides a system for interpreting and managing "missed" return wave signals. (Nishimura, Column 18, lines 38-46.)

Applicants believe that the invention recited by claims 1, 7-8, 11, 13, 15, and 16 of the present application is not anticipated by Nishimura. Regarding claims 1, 7, and 8, Nishimura does not disclose "an electronic controller . . . ; an advanced cruise control system connected with said electronic controller and producing communication signals; . . . wherein said electronic controller disengages said advanced cruise control mode *in response to receiving no valid communication signal for greater than a first period of time.*" In the Office Action, the Examiner stated that "Columns 18-20 and Figure 20 [of Nishimura] teach of the operation of the vehicle when a signal is missing or erroneous." (Office Action, December 5, 2002, page 2.) Applicants respectfully submit that these cited portions of the

Nishimura disclosure do not discuss how the Nishimura apparatus responds "to receiving *no valid communication signal for greater than a first period of time.*" Rather, the cited portions of Nishimura address how "missing" return wave signals, which may occur regularly during operation of the Nishimura apparatus, are interpreted and managed by Nishimura's apparatus.

The "missing" and "deteriorated" signal conditions discussed in Nishimura indicate either (1) that the distance sensor reading indicates an infinite or excessive distance between the controlled vehicle and the vehicle ahead (*i.e.*, a "missed" return wave signal) (Nishimura, Column 18, lines 47-54); or (2) that return wave signals have been "missed" in greater than a predetermined amount, as during rainy conditions (indicating a "deterioration" of the distance sensor function) (Nishimura, Column 20, lines 8-43). The detection of "missed" return wave signals and the "deterioration" of distance sensor function due to rain or excessive vehicle pitch motion are normal, predictable conditions that may occur regularly during operation of the apparatus. These conditions are properly addressed and managed by the apparatus disclosed in Nishimura when *valid communications* are maintained between components of the apparatus. Thus, a distinction may be made between (1) *valid* communications between components, which may properly and regularly indicate normal "missed" return wave signals or the deterioration of distance sensor function, and (2) unanticipated communications *malfunctions or disruptions* between components, which may be caused, for example, by faulty wiring. The Nishimura disclosure indicates that valid communications between components may facilitate proper management of such conditions as the absence of a vehicle ahead or rainy conditions. On the other hand, when communications between an advanced cruise control system and an electronic controller are corrupted, such as by faulty wiring, unpredictable results may occur.

In support of the above-recognized distinction between (1) *valid* communications, such as those indicating the absence of a vehicle ahead, and (2) *invalid* communications, such as those caused by faulty wiring, various excerpts from the present specification are presented below. "Oftentimes the advanced cruise control systems and engine control systems are manufactured by different companies. It is therefore important to have a standard communication format to permit these devices to communicate with various engine manufacturers' engine controllers." (Paragraph 05.) "Although the data bus

communications standards set forth in J1939 work satisfactorily, there are instances when too much data or noise on the bus, among other reasons, prevents the engine controller from receiving a particular data transmission, or causes the data to be corrupted." (Paragraph 7.)

> Those skilled in the art will recognize that there are many different kinds of signal validation techniques for digital communications such as those transmitted over the preferred data bus 50. Examples of such validation techniques could include *checksum, CRC, MNP or CCITT V.42* among other techniques, any of which could be used to verify that the transmitted signal has not been compromised by noise on the data bus 50, data collisions that may occur when two different devices attempt to transmit data on the bus at almost the same time, or other known causes of distorting the data.

(Paragraph 20.) "[T]he absence of a valid signal between the advanced cruise control system 80 and the ECM 40 generally indicates that there is a communication failure or a serious defect in the communications between those devices." (Paragraph 24.) "If the communication error continues for a time greater than t2, then a communication failure likely exists, for example a bad connection between components or faulty wiring, and the ECM 40 disables the advanced cruise control system 80." (Paragraph 26.)

Nishimura discusses how its apparatus interprets and manages "missed" return wave signals (indicating, for example, the absence of a vehicle ahead) but does not discuss how its apparatus responds "to receiving *no valid communication signal for greater than a first period of time*," for example when there is a bad connection between components or faulty wiring. Thus, Nishimura fails to provide "an electronic controller . . . ; an advanced cruise control system connected with said electronic controller and producing communication signals; . . . wherein said electronic controller disengages said advanced cruise control mode *in response to receiving no valid communication signal for greater than a first period of time*." As a result, Nishimura does not anticipate claims 1, 7, and 8 of the present application.

Similarly, Applicants respectfully submit that Nishimura fails to anticipate claims 11, 13, 15, and 16 because Nishimura fails to disclose a method comprising "disengaging said advanced cruise control system *as a function of not receiving one or more valid communication signals for a first time period.*"

IV.   Obviousness Rejection

Claims 2-6, 9-10, 12, and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,594,645 issued to Nishimura *et al.* in view of U.S. Patent No. 4,120,373 issued to Fleischer.

Fleischer discloses a "vehicle speed control system in which a disconnect coupling is interposed between a positioning motor and the fuel supply control element, typically the throttle of a gasoline-type vehicle engine." (Fleischer, Column 1, lines 11-17 and 61-65.) The speed control system of Fleischer can be disabled by operation of a disabling switch (71), which may be either manually operated or automatically operated by the brake or clutch of the vehicle. (Fleischer, Column 4, line 66, to Column 5, line 4.) In a properly functioning embodiment, activation of the disabling switch results in a nearly immediate opening of the coupling, for example under spring pressure, and therefore causes the throttle to be returned to its idle position. (Fleischer, Column 5, lines 17-20; Column 6, lines 31-35.) "It may occur, however, that the coupling . . . is defective." (Fleischer, Column 5, lines 20-22.) Thus, Fleischer provides a backup system that monitors the functionality of the coupling by measuring how fast, if at all, the throttle is returned to idle position by the spring. (Fleischer, Column 6, lines 24-46.) If the coupling is defective and the throttle is not nearly immediately returned to idle position by the spring (after approximately 200 milliseconds), the backup system causes an electric positioning motor to automatically return the throttle to idle position. (Fleischer, Column 6, lines 24-46.) Moreover, if the backup system is activated by a slow or inoperative coupling, the speed control system will be automatically disabled. (Fleischer, Column 6, lines 24-57.)

Applicants respectfully submit that the disclosure of Fleischer does not remedy the deficiencies of Nishimura, as explained in section I. above, to anticipate or render obvious any of claims 2-6, 9-10, 12, and 14. Regarding claims 2-6 and 9-10, as with Nishimura, Fleischer fails to provide "an electronic controller . . . ; an advanced cruise control system connected with said electronic controller and producing communication signals; . . . wherein said electronic controller disengages said advanced cruise control mode *in response to receiving no valid communication signal for greater than a first period of time.*"

Applicants respectfully submit that the Fleischer disclosure does not discuss how its cruise control apparatus responds "to receiving *no valid communication signal for greater than a first period of time.*" Rather, Fleischer discloses a system that relies on maintaining valid communications between components of its speed control system in order to properly detect a malfunctioning disconnect coupling. In fact, Fleischer teaches that when valid communications are maintained within its apparatus, such conditions as the slow return of a throttle to idle position may properly be addressed and managed. However, when communications among components are unexpectedly disrupted or distorted, management of such conditions may be unpredictable. Therefore, Fleischer fails to provide "an electronic controller . . . ; an advanced cruise control system connected with said electronic controller and producing communication signals; . . . wherein said electronic controller disengages said advanced cruise control mode *in response to receiving no valid communication signal for greater than a first period of time.*" Thus, Fleischer, alone or in combination with Nishimura, does not anticipate or render obvious any of claims 2-6 and 9-10.

Similarly, Applicants respectfully submit that Nishimura in view of Fleischer fails to render obvious any of claims 12 and 14 because both Nishimura and Fleischer fail to disclose a method comprising "disengaging said advanced cruise control system *as a function of not receiving one or more valid communication signals for a first time period.*"

V. Conclusion

Applicants respectfully submit that all of the stated grounds of rejection have been properly traversed. It is respectfully urged that the subject application is in condition for allowance, and allowance of the application at issue is respectfully requested. Should the

Examiner believe that an interview would facilitate an early disposal of the application, Applicants' undersigned attorney invites a telephone call at the below-listed number.

Respectfully submitted,

_____

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EXHIBIT A

Title: APPARATUS AND METHOD FOR DATA COMMUNICATION
Application No.: 09/977,726
Attorney Docket No.: 01-521

Please amend paragraph 16 of the specification as indicated below, wherein insertions are underlined.

[16]   Also connected with the data bus 50 is an advanced cruise control system 80. These systems are well known in the art and are available from several different manufactures. **One** such system is manufactured by Eaton VORAD Technologies, and is known as EVT-300 with SMARTCRUISE®. Another example of such a system is disclosed in U.S. Patent No. 6,076,622 assigned to Eaton VORAD Technologies, L.L.C., the disclosure of which is incorporated herein by reference. Any one of these systems can be used in connection with an embodiment of the present invention. As is known to those skilled in the art, the advanced cruise control system 80 communicates with the ECM 40 over the data bus 50 and preferably communicates data or instructions to the cruise control feature 41, which are then used to control fuel delivery to the engine 20, or control command signals issued to a compression brake (not shown). In a preferred embodiment, the advanced cruise control system 80, produces a periodic data output onto the data bus 50, which in a preferred embodiment occurs about every 100 ms. Those skilled in the art will recognize that other periodic rates could readily and easily be used. Although the advanced cruise control system 80 of a preferred embodiment produces periodic signals, in other embodiments different communications protocols and formats may be used without deviating from the scope of the present invention as defined by the appended claims. For example, the communications may be interrupt driven, or have hand-shaking whereby the ECM 40 prompts the advanced cruise control system 80 for data. Still other protocols and formats are **known** to those skilled in the art and could be used in connection with the present invention.

EXHIBIT B

Title: APPARATUS AND METHOD FOR DATA COMMUNICATION
Application No.: 09/977,726
Attorney Docket No.: 01-521

Please amend the claims identified below, wherein insertions are underlined and deletions are enclosed within brackets.

1.   (Amended) A compression ignition engine, comprising:

an electronic controller, said electronic controller producing fuel delivery commands to control power output of said engine, said electronic controller including a cruise control mode;

an advanced cruise control system connected with said electronic controller and producing communication signals;

wherein said electronic controller receives said communication signals and calculates a fuel delivery command based, at least in part, on said communication signals at least when said electronic controller is in an advanced cruise control mode; and

wherein said electronic controller disengages said **advanced** cruise control mode in response to receiving no valid **[control]** **communication** signal for greater than a first period of time.

2.   (Amended) The compression ignition engine of claim 1, wherein said electronic controller disables said **advanced** cruise control mode in response to receiving no valid **[control]** **communication** signal[s] for greater than a second period of time.

7.   (Amended) The compression ignition engine of claim 1, wherein said electronic controller re-engages said advanced cruise control system in response to **one or more** operator cruise control inputs.

8.   (Amended) The compression ignition engine of claim 7, wherein said operator cruise control inputs include **one** of a cruise control resume switch and a set switch[es].

11.   (Amended) A method of controlling a compression ignition engine equipped with an electronic controller and an advanced cruise control system, said method comprising:

receiving communication signals from said advanced cruise control system; and

disengaging said advanced cruise control system as a function of not receiving **one or more** valid [control] **communication** signals for a first time period.

12.   (Amended) The method of claim 11, further comprising:

disabling said advanced cruise control system as a function of not receiving **one or more** valid [control] **communication** signals for a second period of time.

13.   (Amended) The method of claim 11, further comprising:

re-engaging said advanced cruise control after said step of disengaging, in response to **one or more** operator cruise control inputs.

14.   (Amended) The method of claim 12, further comprising:

re-enabling said advanced cruise control in response to **an** [said] operator turning off the engine and turning it back on.

15.   (Amended) The method of claim 13, wherein said operator cruise control inputs include [an] **a** cruise control resume switch.

16.   (Amended) The method of claim [11] **12**, further comprising:

engaging cruise control, after said step of disabling, in response to **one or more** operator cruise control inputs.

EXHIBIT C

Title: APPARATUS AND METHOD FOR DATA COMMUNICATION

Application No.: 09/977,726

Attorney Docket No.: 01-521

All pending claims as of March 5, 2003:

1.   (Amended) A compression ignition engine, comprising:

an electronic controller, said electronic controller producing fuel delivery commands to control power output of said engine, said electronic controller including a cruise control mode;

an advanced cruise control system connected with said electronic controller and producing communication signals;

wherein said electronic controller receives said communication signals and calculates a fuel delivery command based, at least in part, on said communication signals at least when said electronic controller is in an advanced cruise control mode; and

wherein said electronic controller disengages said advanced cruise control mode in response to receiving no valid communication signal for greater than a first period of time.

2.   (Amended) The compression ignition engine of claim 1, wherein said electronic controller disables said advanced cruise control mode in response to receiving no valid communication signal for greater than a second period of time.

3.   The compression ignition engine of claim 1, wherein said first period of time is less than about 500 milliseconds.

4.   The compression ignition engine of claim 2, wherein said second period of time is less than about 3500 milliseconds.

5.   The compression ignition engine of claim 1, wherein said first period of time is about 500 milliseconds.

6.   The compression ignition engine of claim 2, wherein said second period of time is about 3500 milliseconds.

7.   (Amended) The compression ignition engine of claim 1, wherein said electronic controller re-engages said advanced cruise control system in response to one or more operator cruise control inputs.

8.   (Amended) The compression ignition engine of claim 7, wherein said operator cruise control inputs include one of a cruise control resume switch and a set switch.

9.   The compression ignition engine of claim 2, wherein said electronic controller re-enables said advanced cruise control in response to operator re-initialization of the electronic controller.

10.   The compression ignition engine of claim 9, wherein said operator re-initialization includes turning off the engine and turning it back on.

11.   (Amended) A method of controlling a compression ignition engine equipped with an electronic controller and an advanced cruise control system, said method comprising:

receiving communication signals from said advanced cruise control system; and

disengaging said advanced cruise control system as a function of not receiving one or more valid communication signals for a first time period.

12.   (Amended) The method of claim 11, further comprising:

disabling said advanced cruise control system as a function of not receiving one or more valid communication signals for a second period of time.

13.   (Amended) The method of claim 11, further comprising:

re-engaging said advanced cruise control after said step of disengaging, in response to one or more operator cruise control inputs.

14.   (Amended) The method of claim 12, further comprising:

re-enabling said advanced cruise control in response to an operator turning off the engine and turning it back on.

15.   (Amended) The method of claim 13, wherein said operator cruise control inputs include a cruise control resume switch.

16.   (Amended) The method of claim 12, further comprising:

engaging cruise control, after said step of disabling, in response to one or more operator cruise control inputs.